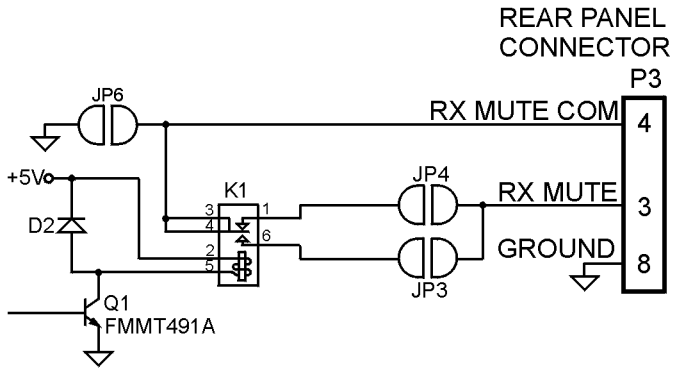
Mute Feature

The C Plus has circuitry that can be used to mute a local speaker or even mute repeat audio at a repeater.

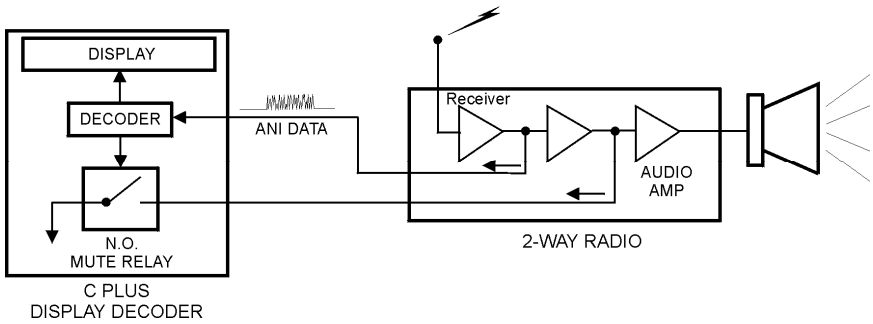
The circuit is composed of a SPDT relay with jumpers allowing the selection of Normally Closed or Normally Open contacts. Another jumper permits the common to be internally attached to ground.



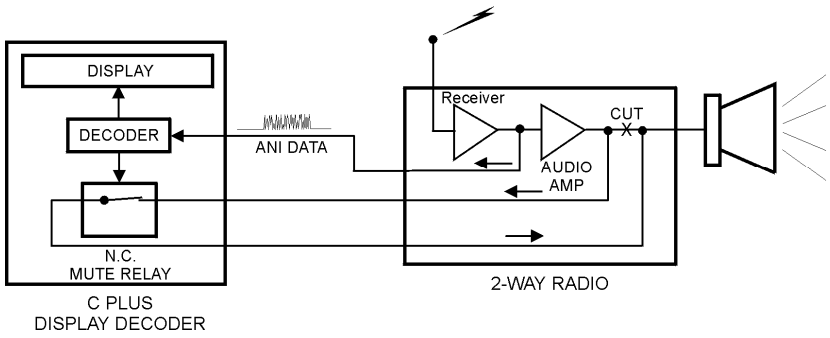
When using the mute feature, it is especially important to attach station ground to the back barrier strip of the C Plus at P3 pin 8 or P2 pin 10. Audio common used at the *Data In* –, even if it is ground, is not sufficient.

Because of the circuit's simplicity and flexibility, the Mute feature can be implemented in a number of ways to satisfy the requirements of the muted radio. JP-6 is used to attach ground to the common (or armature) of the relay. JP-3 attaches the normally open contact to the rear panel connector and JP-4 attaches the normally closed contact to the rear panel.

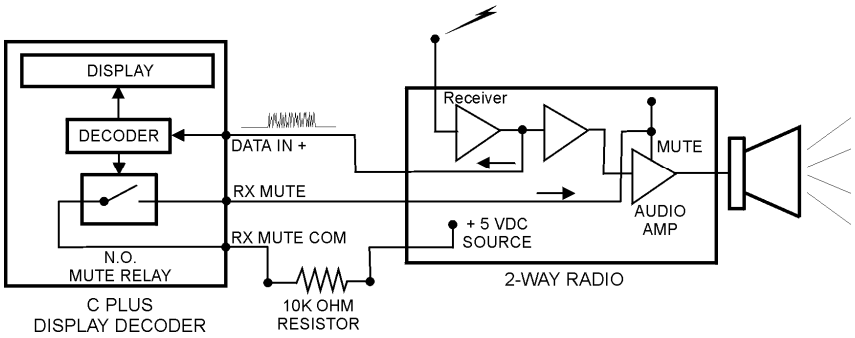
Grounding the audio signal:
If you desire to mute the radio by grounding the audio input to the speaker amplifier, insert JP-6 and JP-3. Connect *RX Mute to* the input of the radio audio amplifier IC.



Opening the audio signal:
If you desire to mute the radio by opening the circuit to the speaker, JP-6 and JP-3 should be open and JP-4 should be inserted. Break the connection to the speaker and attach *RX Mute Com* to one side of the break and *RX Mute* to the other side of the break. This places relay K1 in series with the speaker. Normally K1 is not energized and the audio signal will be passed through to the speaker. When the relay is energized during mute, the path to the speaker is opened up, muting the speaker.



Activating an existing radio mute circuit:
If the radio has an existing external mute input, verify what sort of signal activates the mute circuitry. If a logic low (or ground) is needed, refer to "Grounding the audio signal" above. If a logic high is needed, JP-6 and JP-4 should be open and JP-3 should be inserted. Attach *RX Mute Com* to a voltage source (+5VDC) in the radio through a 10K Ohm pull up resistor and attach *RX Mute* to the radio mute circuitry. When the relay is energized during mute, the 5VDC signal will be applied to the radio mute gate, activating the internal radio mute.



Additional Information:
The C Plus is capable of two types of mute. One is the standard *Data Mute* and the other is *COS Qualified Mute*.

In the standard Data Mute, the C Plus detects the data, verifies that it is ANI and then activates the mute relay until the data is completed. The drawback of this type of mute is that it could take approximately 50 ms to understand that the noise is ANI data before the mute is activated.

In COS Qualified Mute, the mute relay is active until a valid data burst is received. Once an ANI burst is decoded, the mute relay remains relaxed until the C Plus *Channel Busy* line changes state. The disadvantage of this type of mute is that all radios in the system must have PTT ANI at the beginning of the transmission. The dispatcher will not hear any user who does not have ANI at the beginning of their transmission. This form of mute also requires the use of the Channel Busy line to detect presence/absence of carrier.

See Also:
COS Qualified Mute

Data Mute

Jumpers

Channel Busy